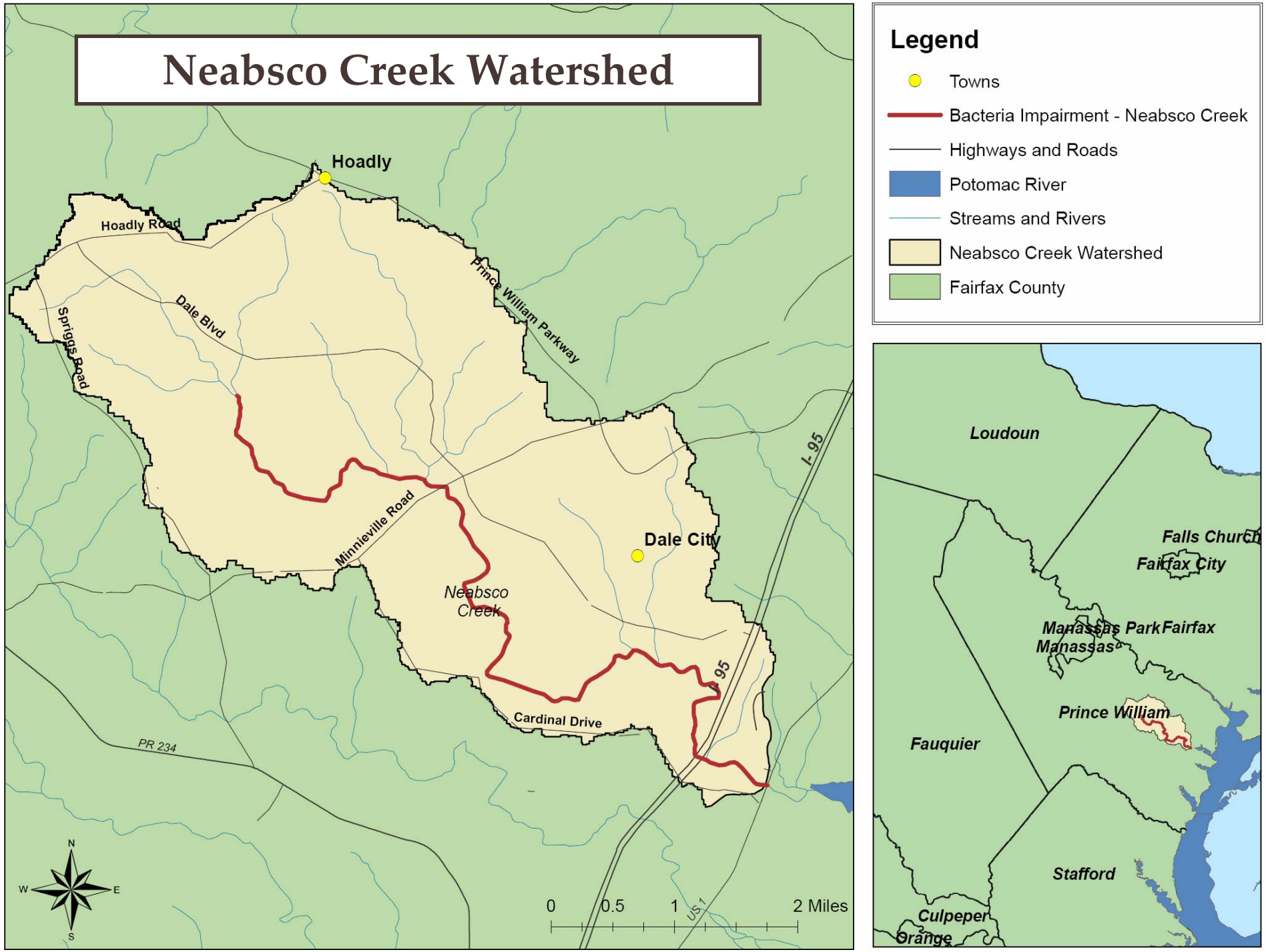
# Neabsco Creek
# Total Maximum Daily Load Study

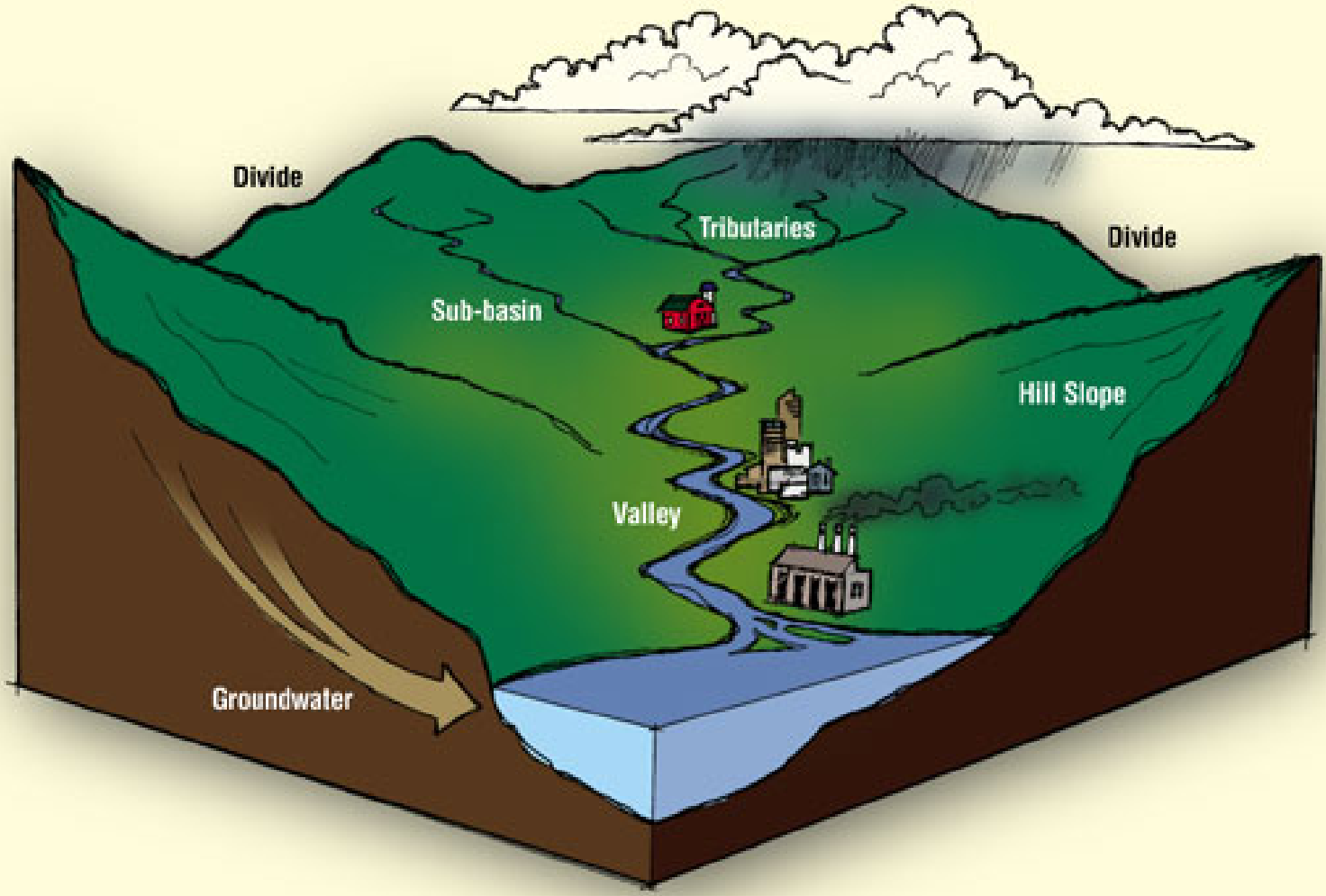
**Public Meeting**
**Woodbridge, Virginia**
**December 13, 2007**

# Why are we here?

- Learn about water quality in Neabsco Creek
- Explain efforts that Virginia is undertaking to improve and protect water quality.
- Learn what you can do to help.


Neabsco Creek Watershed
Hoadly
Hoadly Road
Dale Blvd
Spriggs Road
Prince William Parkway
I- 95
Minnieville Road
Dale City
Neabsco Creek
95
Cardinal Drive
PR 234
US 1
N
W
E
S
0
0.5
1
2 Miles
Legend
Towns
Bacteria Impairment - Neabsco Creek
Highways and Roads
Potomac River
Streams and Rivers
Neabsco Creek Watershed
Fairfax County
Loudoun
Falls Church
Fairfax City
Manassas Park
Fairfax
Manassas
Prince William
Fauquier
Stafford
Culpeper
Orange

# What is a watershed?



# Water Quality in Neabsco Creek

- Portions of Neabsco Creek are not meeting the state water quality standard for the recreational use.
- The purpose of the water quality standards is to protect the following six designated uses:
  - Recreational
  - Aquatic Life
  - Public Water Supply
  - Wildlife
  - Fish Consumption
  - Shellfish

# How do you know the recreation use isn't being met?

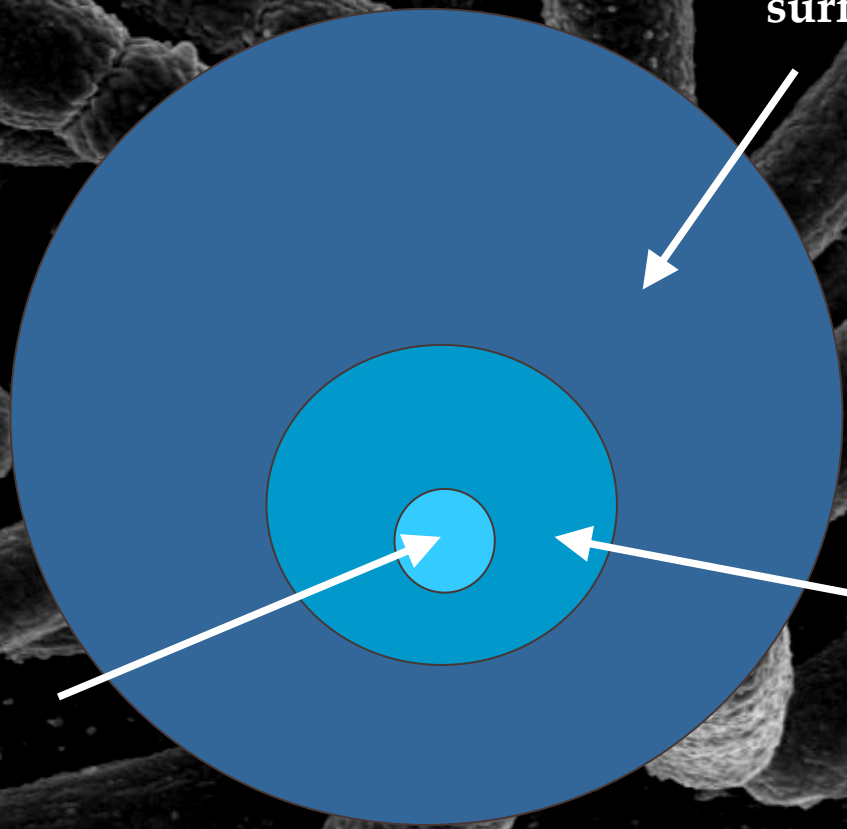
- Monitor Neabsco Creek to determine levels of bacteria present in the water.
- Compare bacteria monitoring data to state water quality criteria.
- Water Quality Criteria for Bacteria (for individual samples):

| |
|---|
| Fecal Coliform Bacteria: 400 cfu/100 mL<br>*E. Coli* Bacteria: 235 cfu/100 mL |

If greater than 10.5% of the samples exceed the water quality standards, and there are 2 or more exceedances, the stream is listed as impaired.

# What are Fecal Coliform Bacteria and *E. Coli* Bacteria?

**Coliform Bacteria:** Commonly found in soil, decaying vegetation, animal feces, and raw surface water.



**Fecal Coliform:**

- Found in the digestive tract of humans and warm blooded animals.
- Indicator of the potential presence of pathogens in water bodies.

***Escherichia coli:***

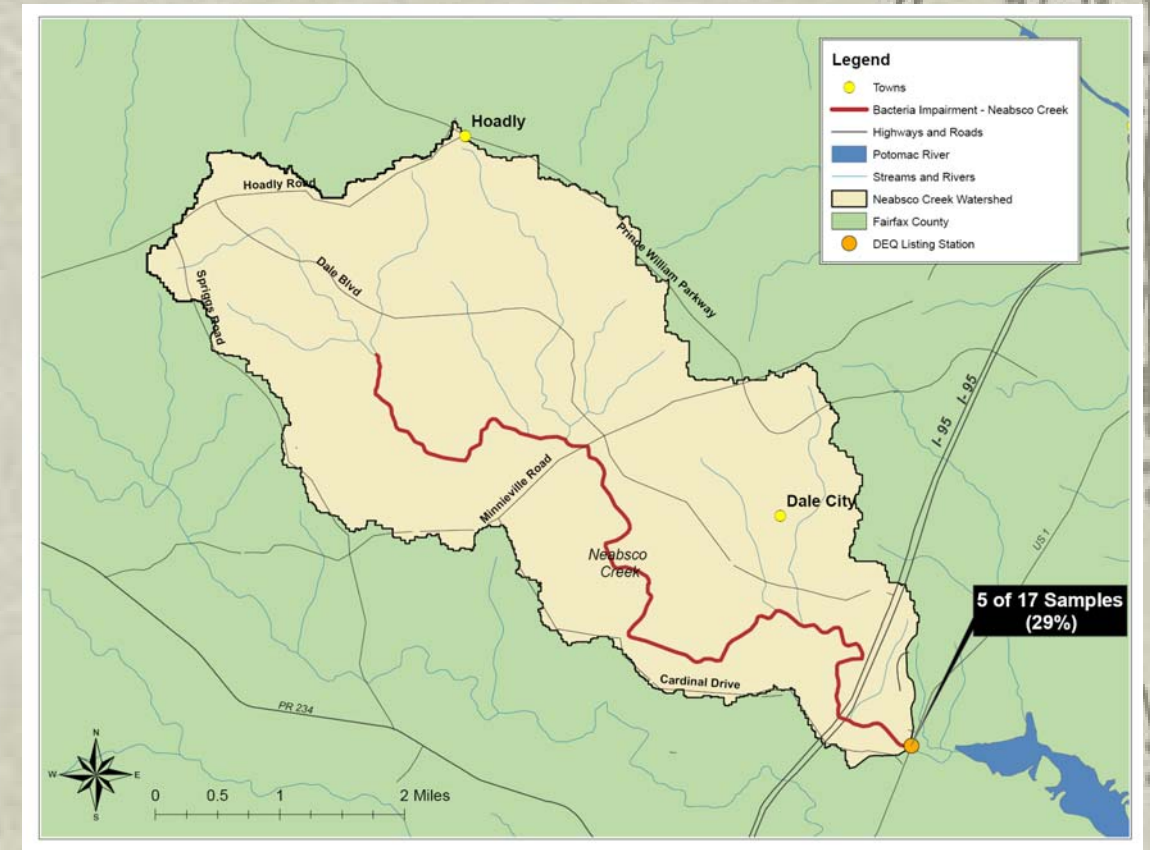
- Subset of fecal coliform bacteria.
- Correlate better with swimming associated illness.

# Potential Sources of Fecal Coliform Bacteria


# Neabsco Creek Bacteria Impairment

| Stream Name | Locality | Impairment | Length (miles) | Upstream Limit | Downstream Limit |
|---|---|---|---|---|---|
| Neabsco Creek | Prince William County | Bacteria | 8.42 | Confluence with an unnamed tributary to Neabsco Creek, near Dale City and approximately 0.4 rivermiles downstream from Route 784 (on the tributary) | Start of the tidal waters of Neabsco Bay (just downstream from the Route 1 Bridge Crossing) |

- TMDL study is being done for the non-tidal portion of Neabsco Creek
- Does not meet the Recreational Use – exceeds the water quality standards for Fecal Coliform and *E. Coli* Bacteria.



# So, Neabsco Creek doesn't meet water quality standards, now what?

- The portion of Neabsco Creek that does not meet the water quality standard for the recreational use is listed as "impaired."
- Once a water body is listed as impaired, law* requires us to perform a Total Maximum Daily Load Study.

*Clean Water Act (1972)
*Water Quality Monitoring, Information, and Restoration Act (1997)

# *What is a TMDL ?*

# Total Maximum Daily Load

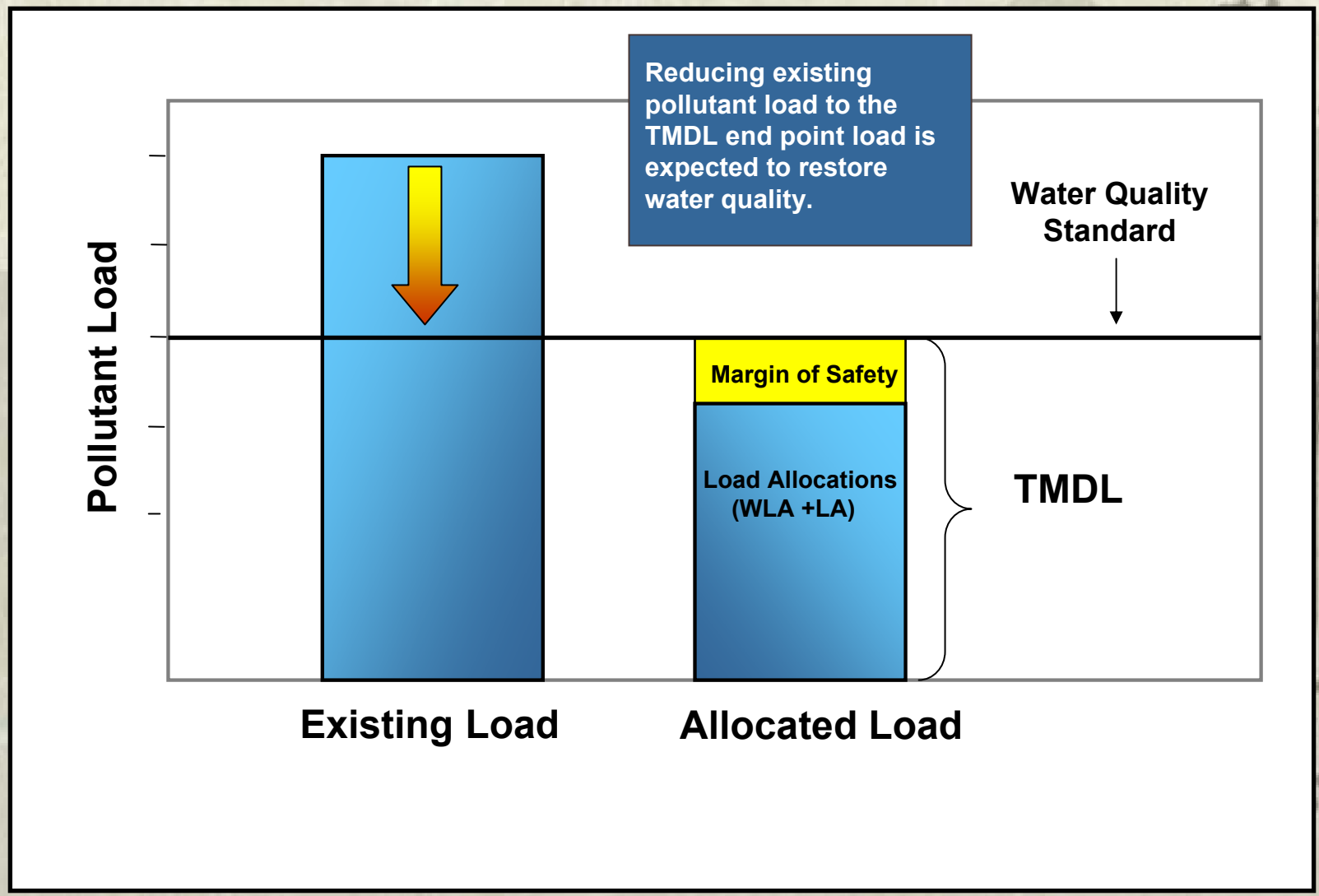
## TMDL = Sum of WLA + Sum of LA + MOS

**Where:**

**TMDL = Total Maximum Daily Load**
**WLA = Waste Load Allocation (point sources)**
**LA = Load Allocation (nonpoint sources)**
**MOS = Margin of Safety**

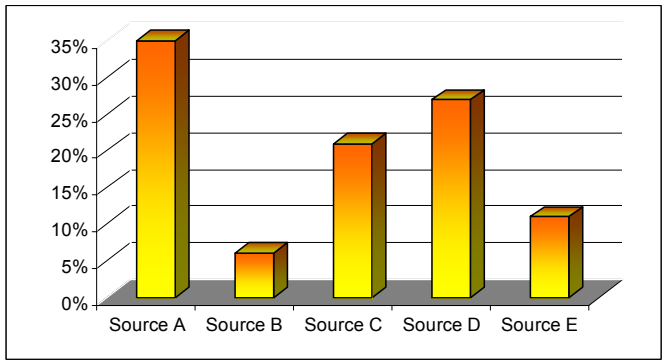
**A TMDL is the amount of a particular pollutant that a stream can receive and still meet Water Quality Standards.**

# An Example TMDL



We are here

TMDL Study

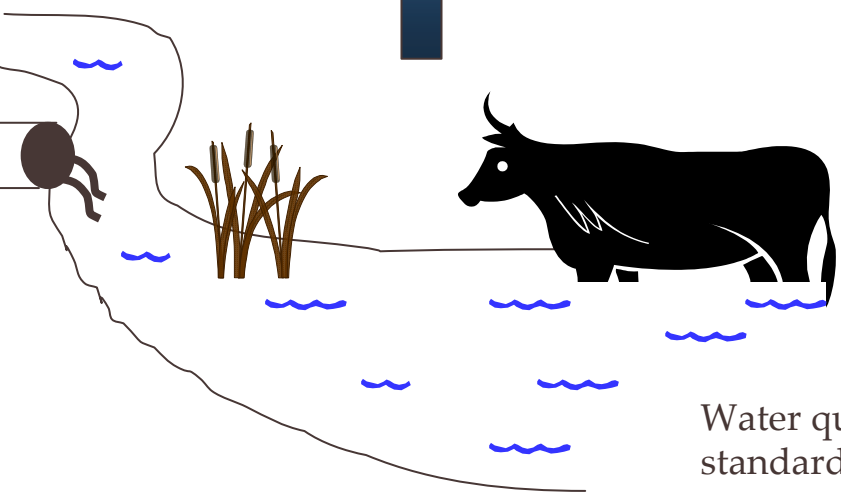


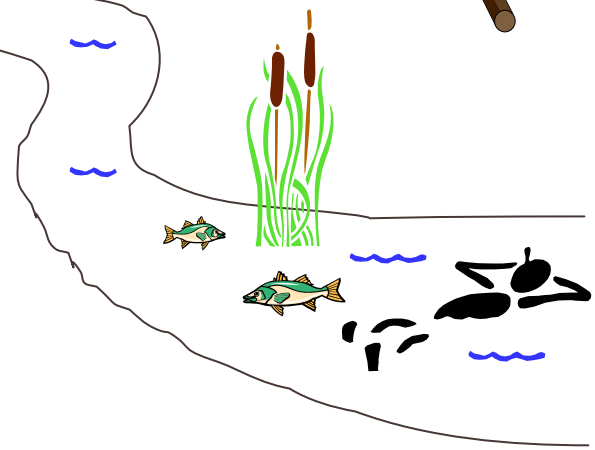

Implementation Plan

DCR

Implementation

Monitoring





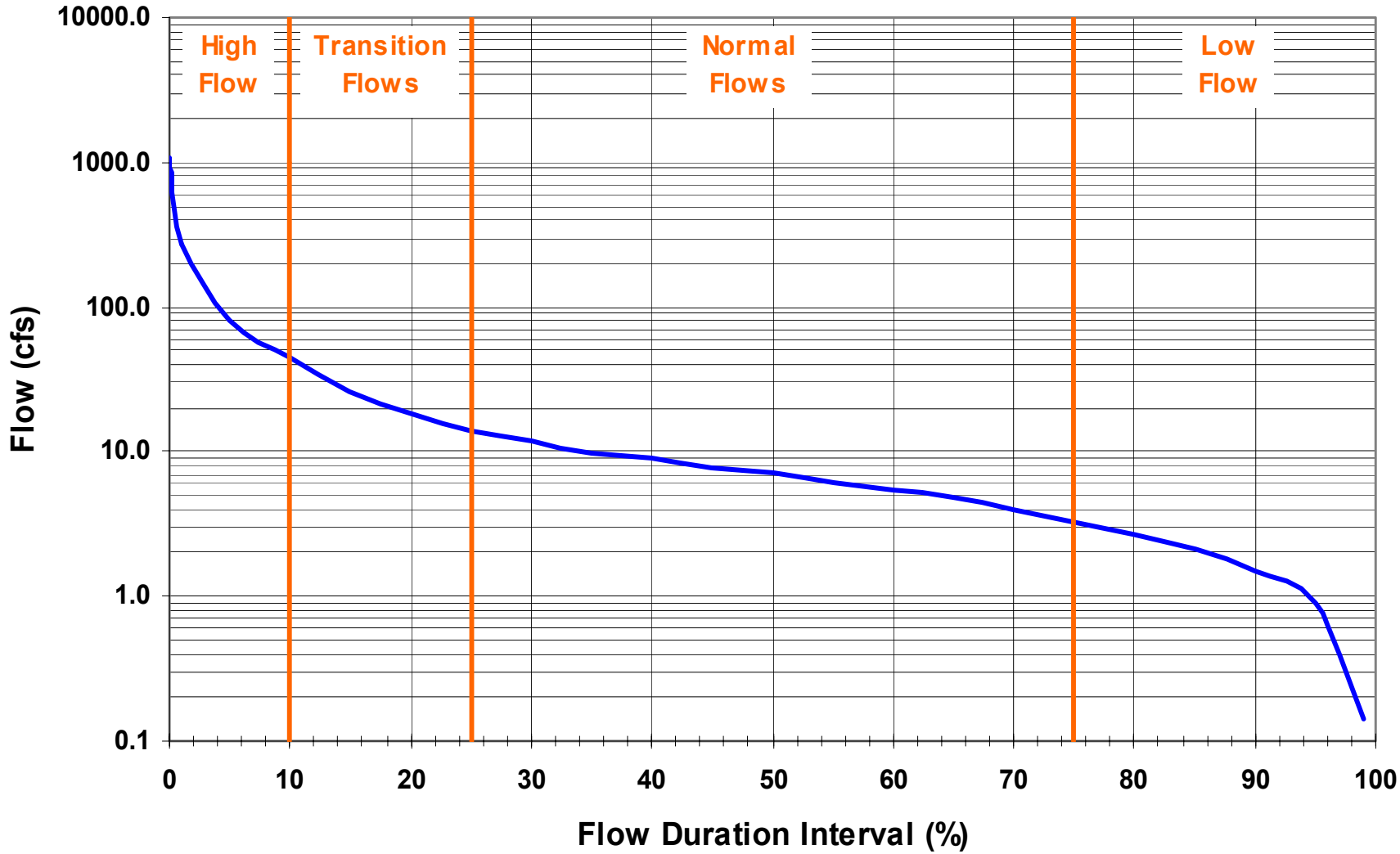
Water quality standards not met

# Questions?

# TMDL Development for Neabsco Creek

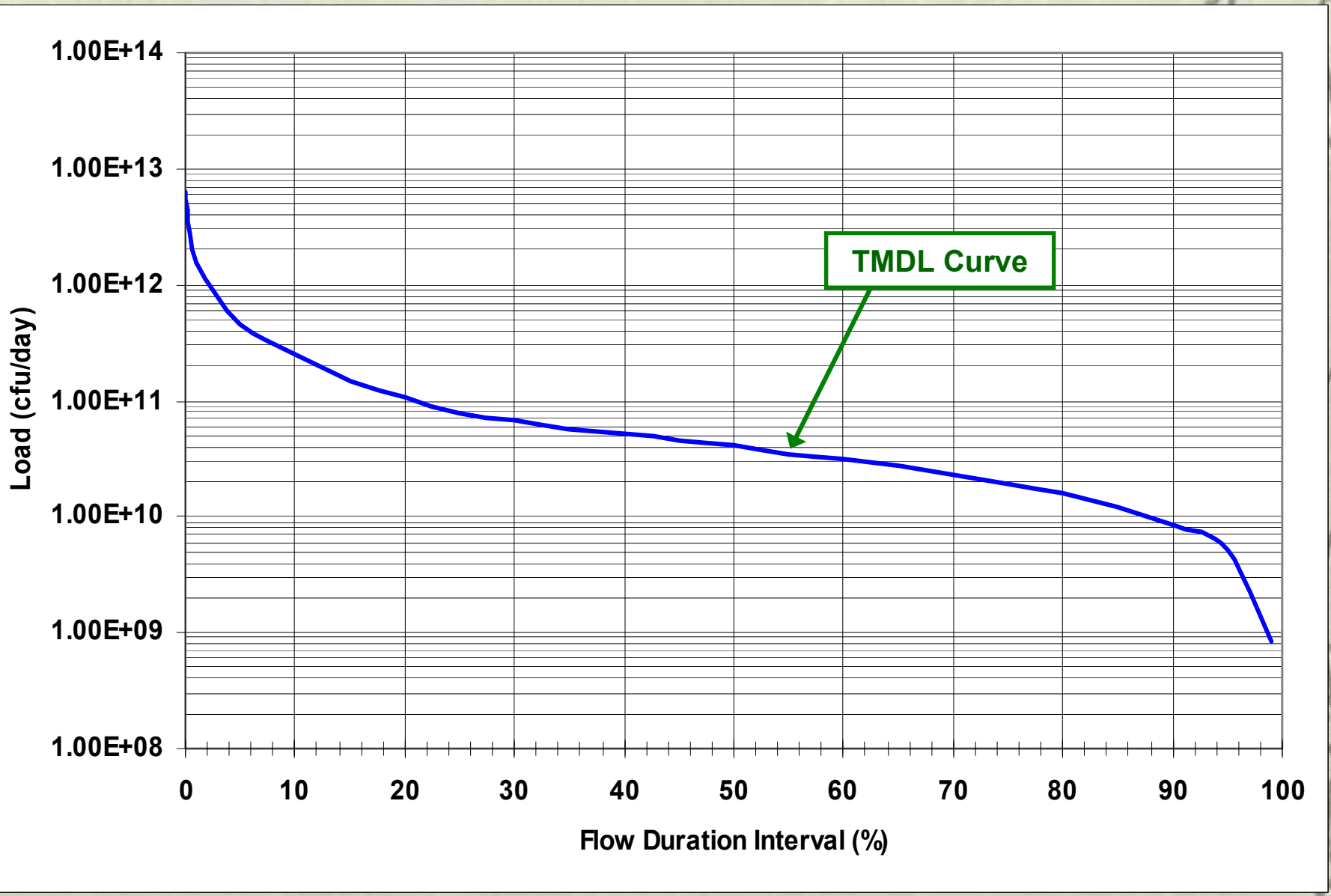
- How big of a reduction in bacteria is needed?
- Where do the reductions need to come from?

# Flow Duration Curve

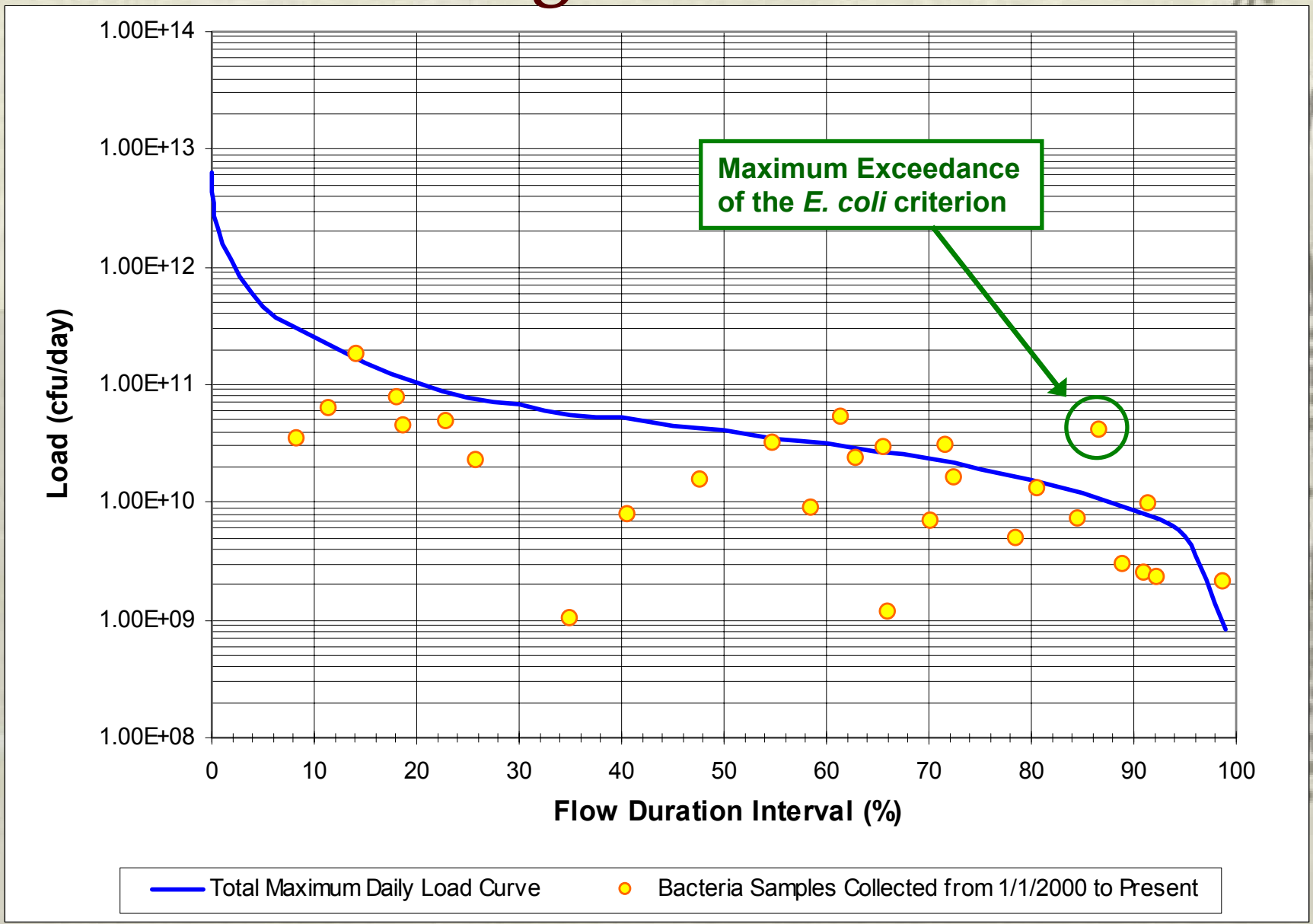



*Neabsco Creek flows were computed from the USGS flow gage on Accotink Creek adjusting for drainage area.*

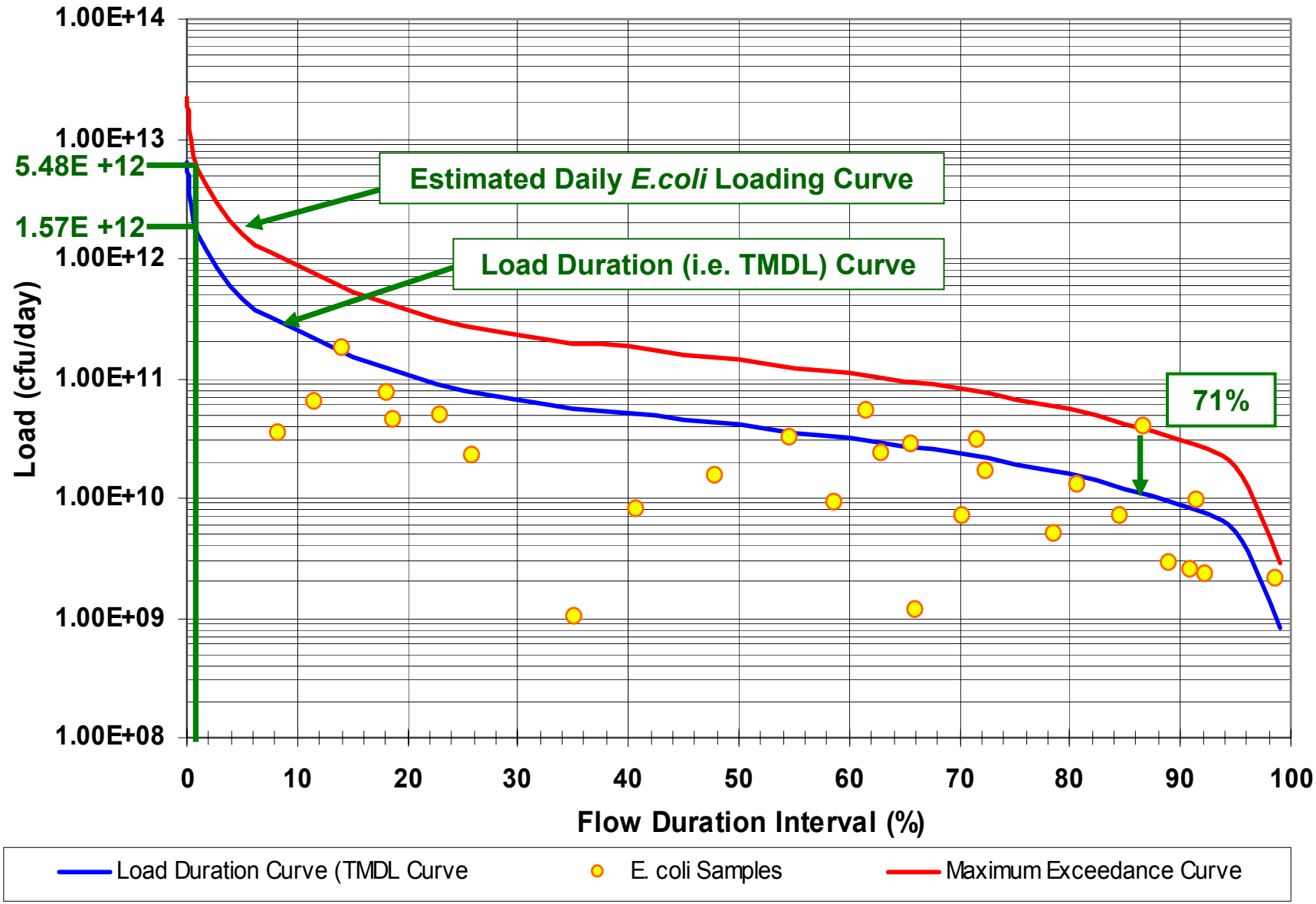
# Load Duration Curve



# Determining TMDL Reductions



# TMDL Reduction



# Required Reductions

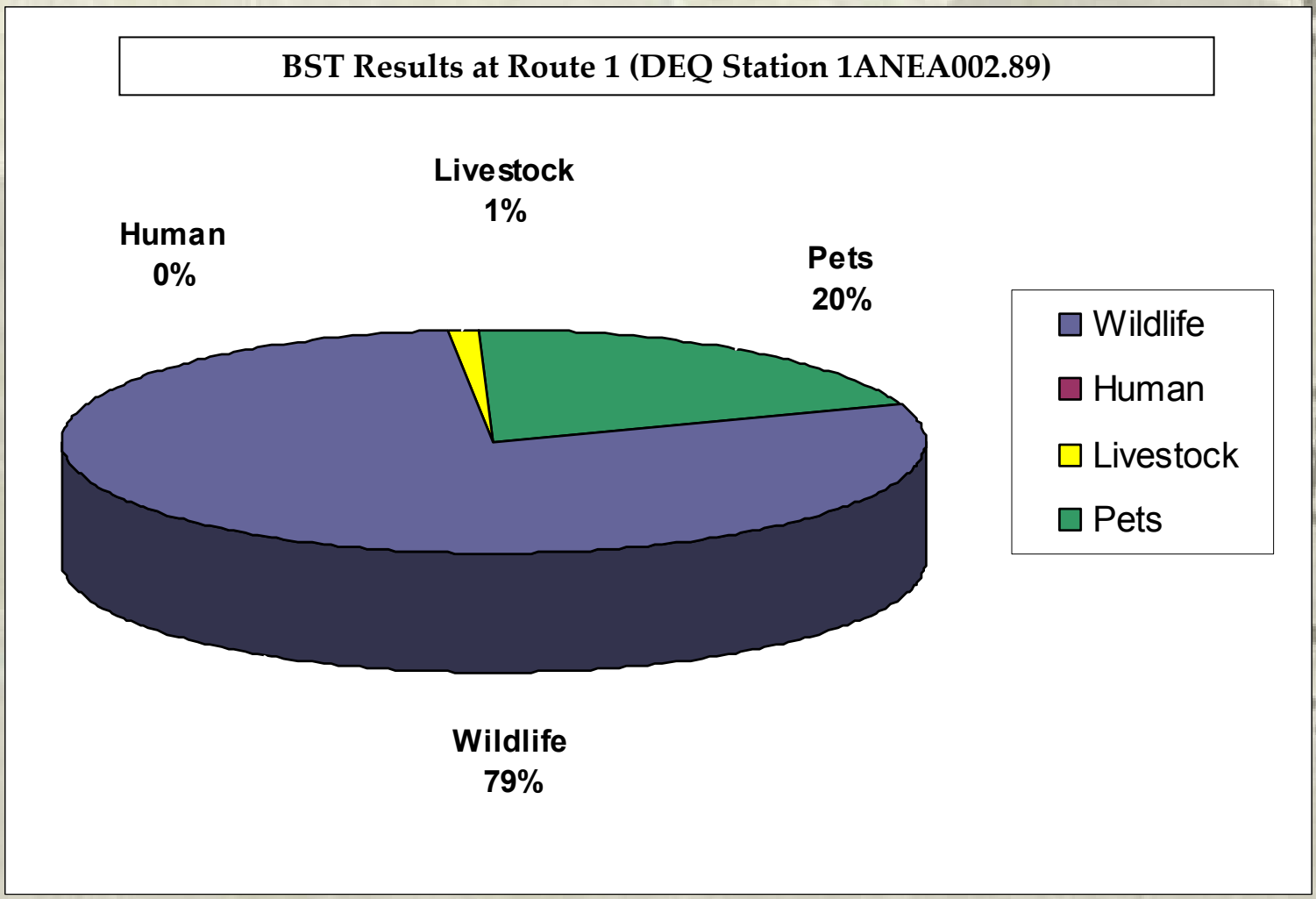
- TMDL calls for the existing load to be reduced by 71%.
- TMDL endpoint is 1.57 E+12 cfu/day.
- Distribute the TMDL load between the WLA and the LA.

| WLA (cfu/day) | LA (cfu/day) | MOS | TMDL (cfu/day) |
|---|---|---|---|
| $1.27 \times 10^{12}$ | $2.97 \times 10^{11}$ | Implicit | $1.57 \times 10^{12}$ |

- Next steps:
  - Determine the bacteria contributions by source.

# Bacteria Contributions by Source

- Bacterial Source Tracking (BST) Data
- BST data collected by Prince William County and DEQ.



# What's Next?

- TMDL Submitted to EPA for Approval
- Implementation Plan Development

Implementation Plans:

- Required by WQMIRA
- Determine appropriate Best Management Practices (BMPs)
- Set measurable goals

# Stage I Implementation Goals

| Load Reduction | 71% (TMDL Load) | 50% | 40% | 33% Stage I Goal | 0% (Existing Load) |
|---|---|---|---|---|---|
| Exceedance Rate | 0% | 4% | 7% | 10% | 25% |

- Approximately 33% reduction in source contributions should lead to a 10% exceedance rate of the *E. coli* criterion.
- 10% exceedance rate means the stream can be delisted from the §303(d) impaired waters list.

# Comments? Feedback?

- Public Comment Period for this meeting extends from December 13, 2007 to January 11, 2008.
- Draft Report is available on the DEQ website at:

  http://www.deq.virginia.gov/tmdl/drftmdls/neabsco.pdf
- All comments on the draft report should be in writing. Please send them to:

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